Converting from edd/dm to edm

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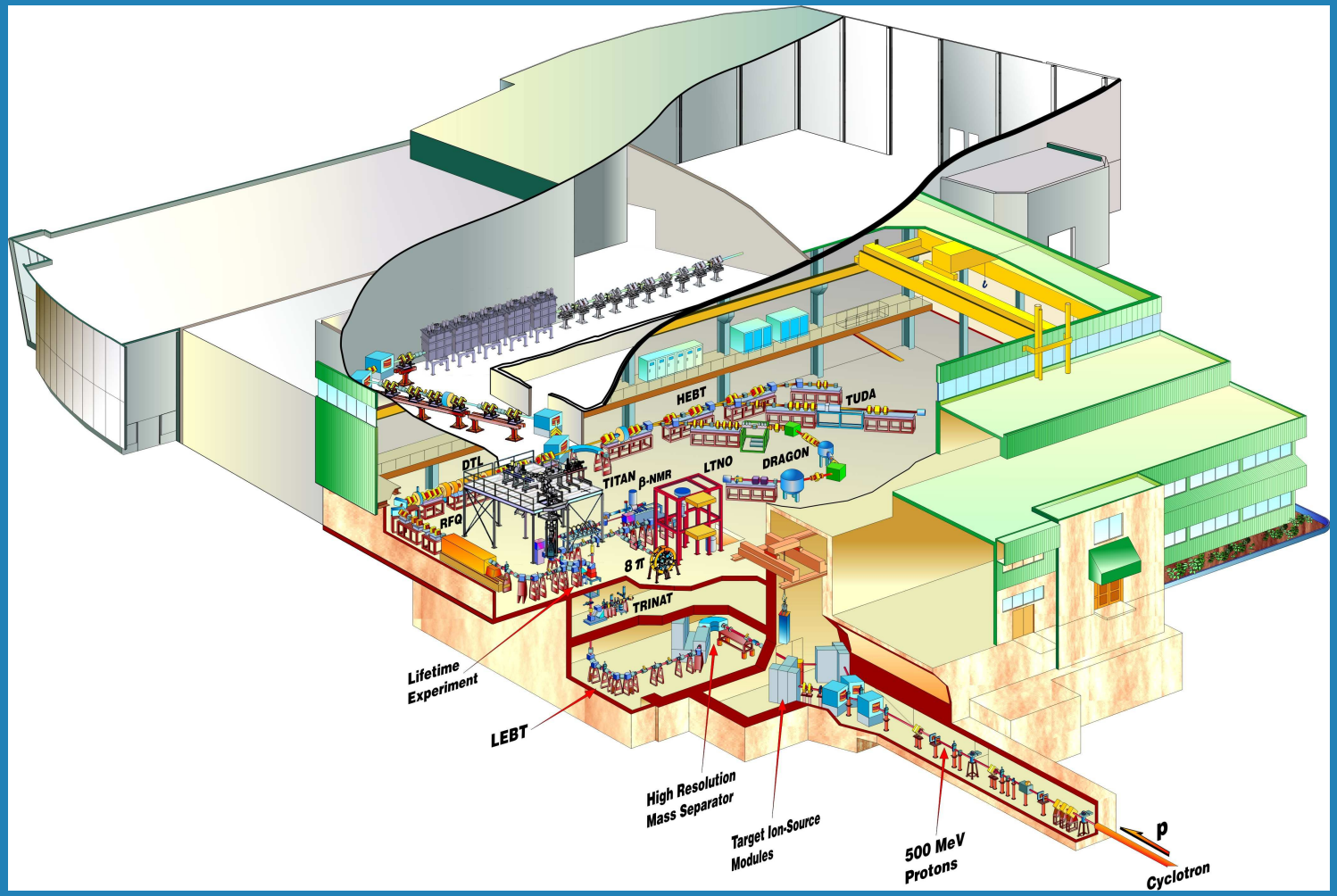
ISAC Radioactive Beam Facility



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ISAC Control System

- 3000 Devices
- ~13000 I/O channels
  - 9000 digital
  - 3500 analog
  - 70 motors
  - ~ 90000 EPICS records
- 34 IOCs (Motorola MVME162, PC104, Pentium)
  vxWorks(26), Linux(3), WindowsXP(5)
- 12 PLC systems (Modicon (11), Siemens(1), supervised by EPICS)
- 9 RF control systems (Windows98/XP, supervised by EPICS)

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edd/dm Situation

- Started with EPICS 10 years ago
- Picked dm because of speed and small footprint

- Old, graphs, …., but “did the job”
- Wanted more features, introduced bug

- No point wasting time → move forward to edm

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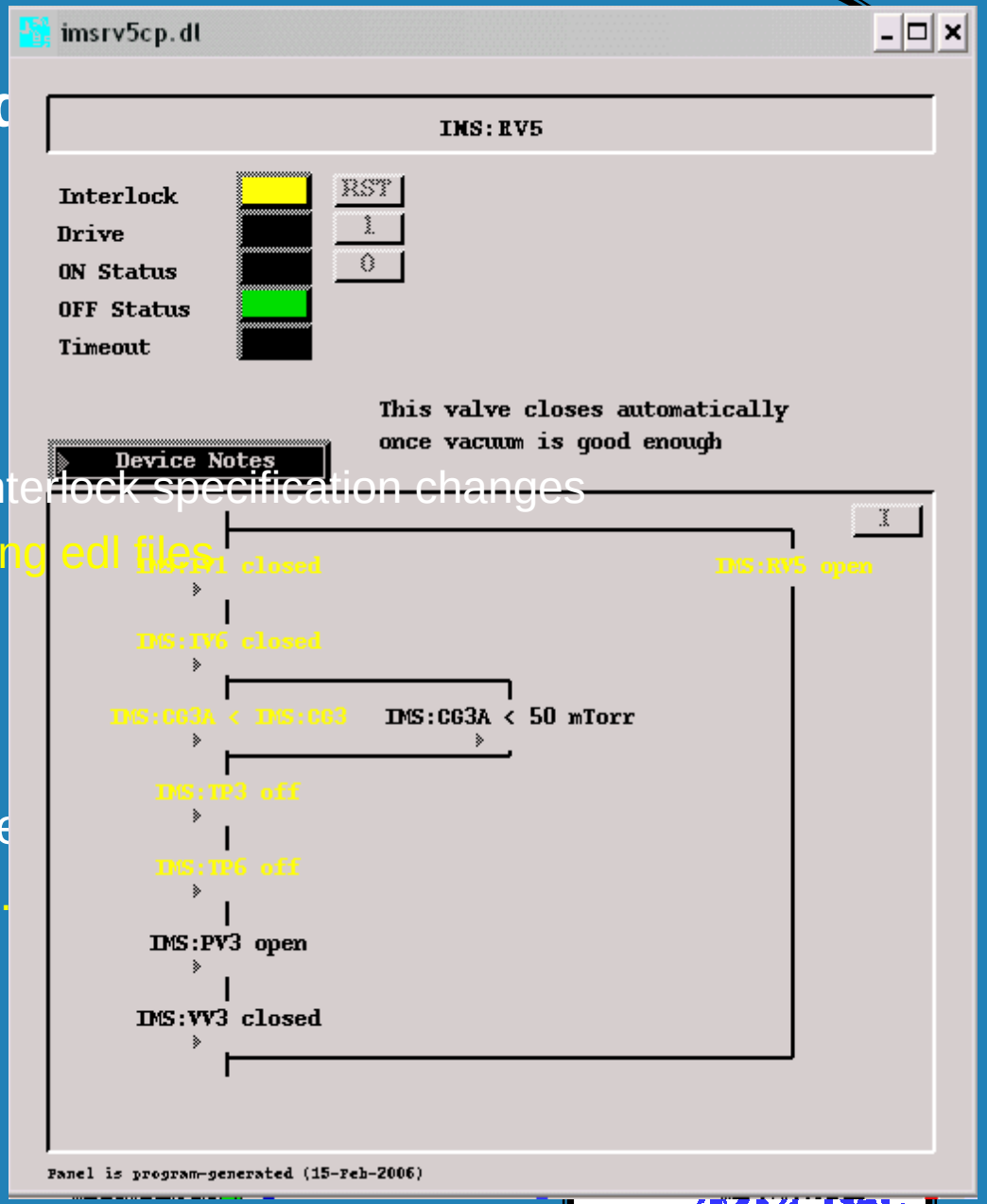
What c

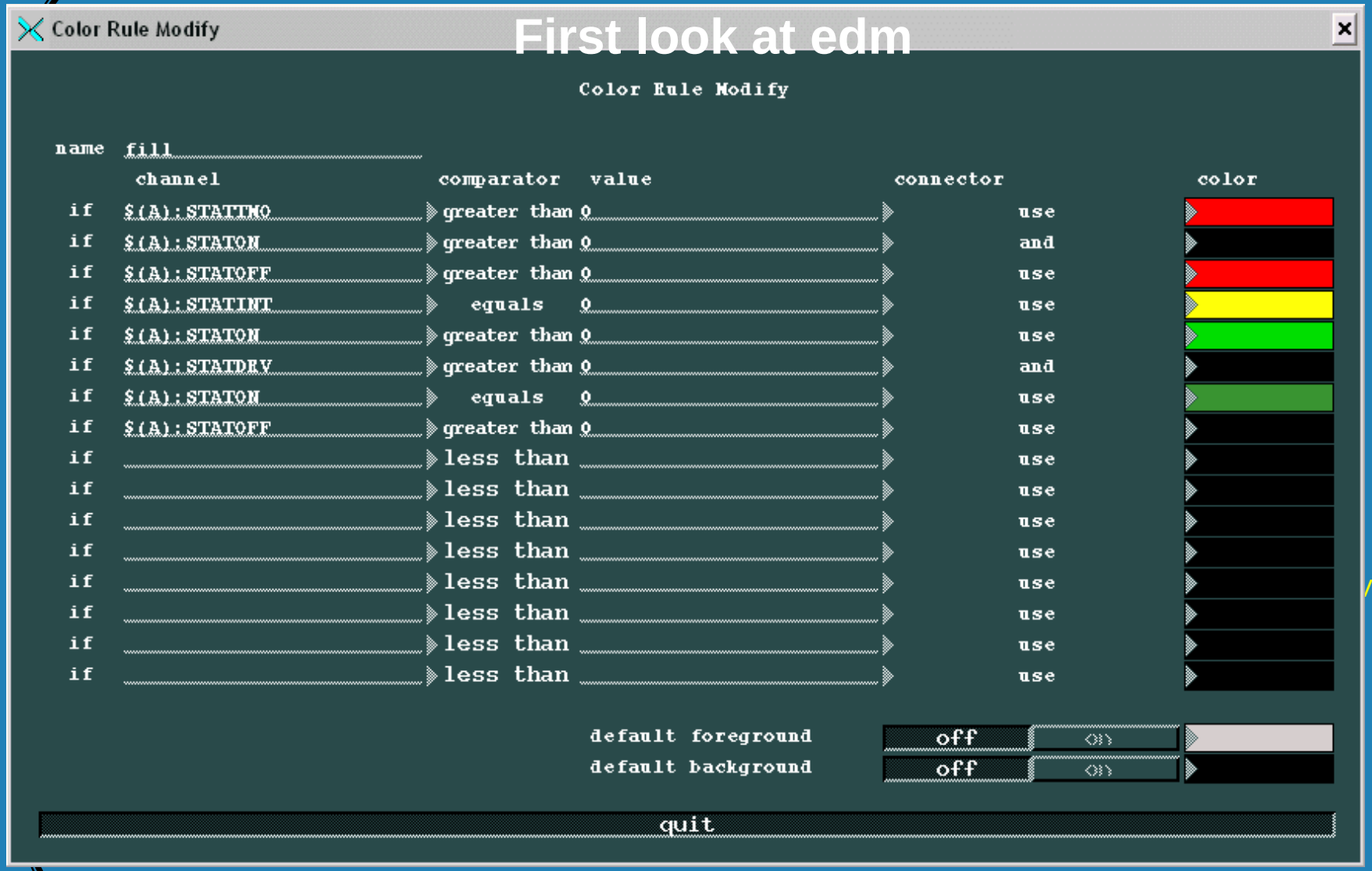
We have 2400 display files

- 1700 generated by program
- regenerated every time an interlock specification changes
  - Need tool for programming edl files

- 700 drawn and maintaine
  - Need converter .adl → .



First look at edm



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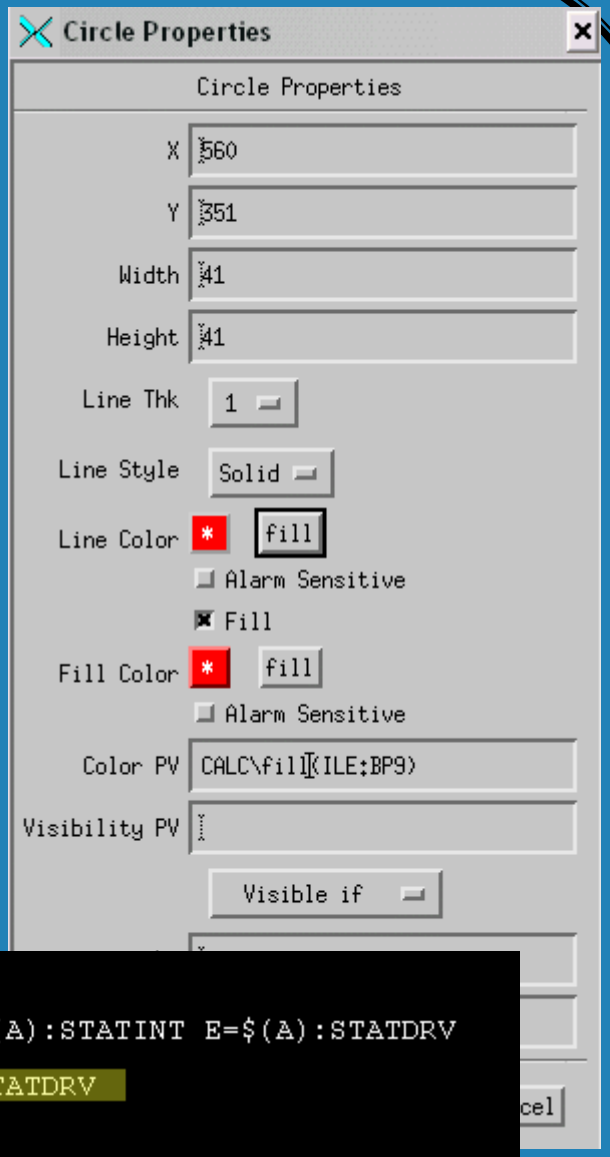
First look at edm

- Potential show-stopper:
  - Colour rules
- Solution:
  - Modify edm (John Sinclair)

```
rule 54 fill {
 = 1     : device-fill-brokenortmo
 = 2     : device-fill-badinterlock
 = 3     : device-fill-on
 = 4     : device-fill-off
 = 5     : device-fill-transition
 default      : value-invalid
}
```

```
# :# fill colour rule
# :# colours: 1 tmo 2 int 3 on 4 off 5 trans
# :# macros:  A=$(A):STATTMO B=$(A):STATON C=$(A):STATOFF D=$(A):STATINT E=$(A):STATDRV
fi fill
A?:@$(A):STATTMO,$(A):STATON,$(A):STATOFF,$(A):STATINT,$(A):STATDRV
   A?1:(B&&C?1:(D=0?2:(B?3:(E&&(!B)?5:(C?4:4)))))
```



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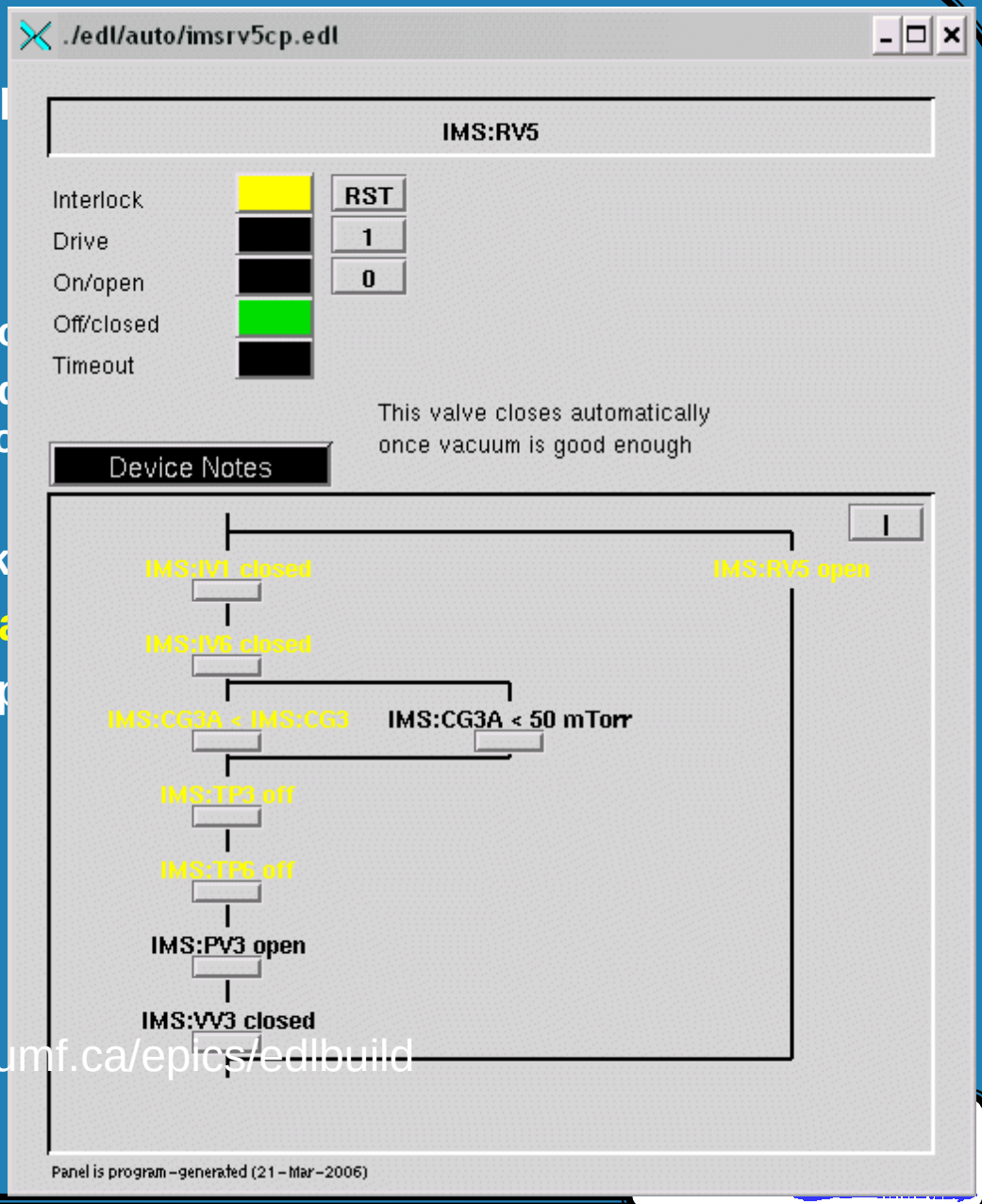
Progra

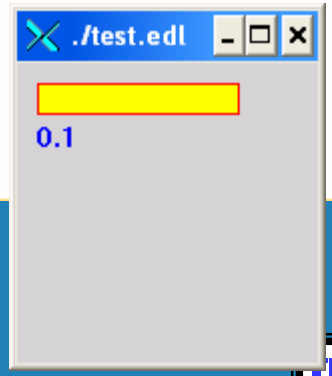
- Perl module library
  - Edl.pm - main code mo
  - EdlRectangle.pm - wid
    -- no widget-specific co
  - .....
- syntax similar to Perl/Tk
- allows configuration of a
- easy to configure site-sp
- extensible



http://isacwserv.triumf.ca/epics/edlbuild

EdlBuild example

```
#!/usr/bin/perl -w

use strict;

# environment variable EDLBUILD
use lib $ENV{EDLBUILD};

use Edl;



my $panel = new Edl('test.edl');

$panel->rectangle(x => 10, y => 10, w => 100, h => 15, lineColor => 'index 10',
                  fill => 1, fillColor => 'index 9');
$panel->text_monitor(x => 10, y => 30, w => 100, h => 15, fgColor => 'index 22',
                  controlPv => '"ITW:IG1:RDVAC"');

$panel->configure(w => 150, h => 150);

$panel->finish();
```



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.adl → .edl Conversion

- started with existing converter badlfish (D. Kotturi, SLAC)
  - fought SLAC specifics (colours, colour rules ..)
  - some things were missing
  - some things wouldn't work for us
- rewrote
  - kept adl parsing – saved tons of work
  - added TRIUMF colour module
  - used EdlBuild for edl generation

  >>> **tadl2edl.pl** <<<

- Included in EdlBuild tar

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Conversion Experience (I)

- Plan
  - prepare operations group – tutorial sessions
  - use window of opportunity – Jan/Feb/Mar shutdown
  - after SC linac controls commissioning
- Actual
  - controls installation/commissoning for SC linac moved into shutdown
  - some chaos
  - operations group was terrific

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Conversion Experience (II)

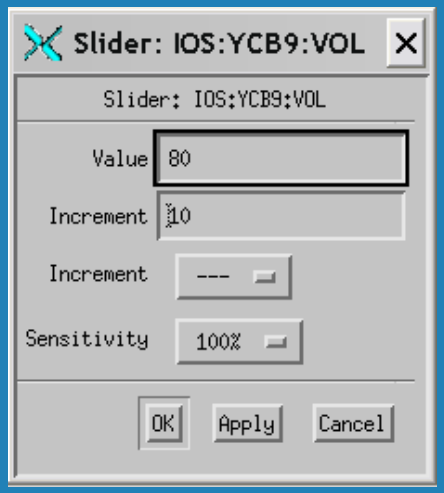
- several iterations: convert ←→ improve tadl2edl
- some things didn't convert well (i.e. we didn't make the converter smart enough)
  - bar-graphs
  - XY-plots

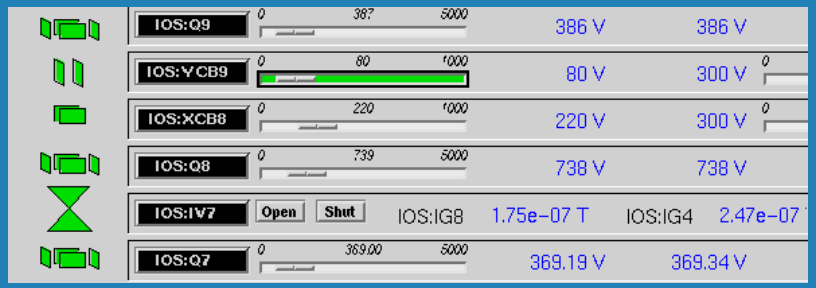
  fixed interactively → no more conversions
- didn't understand edm well enough
  - bad defaults in converter
  - different default behaviour between dm and edm

  used simple Perl filters to fix the whole screen set

Other Issues

- **dm loads “static” record info for each dl file**
  - used HOPR, LOPR for re-scaling XY-plots, bars, meters
- **edm PV factory loads only once**
  - XY-plot ok
  - used kludges with embedded windows
  - JS helped by modifying the meter widget
- **dm valuator (= slider) widgets used extensively**
  - allowed fine sliding
  - extensive TRIUMF mods
- **edm motif slider barely fits**
  - made major mods to motif slider to recreate TRIUMF functionality
  - will be repackaged as “Triumf Slider”





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More issues

- XY-graph
  - needed dump to ASCII file → JS
  - added "clear plot" command
- Bar
  - display PV1
  - colour based on alarm state of PV2

  Fix in database:
  - PV1.SDIS "PV2.SEVR MS"
  - PV1.DISV 4
- Related Display
  - added CTRL-MB3 → start web-browser with cgi script

    - small footprint dillo

    - integrate context-sensitive web-help into edm

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Summary

- Conversion to edm is done
- ISAC controls runs production with edm since late March
- dm removed from last console a few weeks ago

- edm is stable
- operations is happy
- collaboration with John Sinclair was a pleasure – thanks John!

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